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EXAMINER	
GARCIA, LUIS	

ART UNIT	PAPER NUMBER
2613	

DATE MAILED: 10/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/736,818	WU ET AL.	
	Examiner	Art Unit	
	Luis F. Garcia	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 December 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *December 15, 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. **Claim 5 is rejected** under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. e.g. ln4 "the thin film filter n film filter..."

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. **Claims 1-15 and 18-22 are rejected** under 35 U.S.C. 102(b) as being anticipated by Scobey et al (US 6,320,996) hereinafter referred to as Scobey.

Regarding claim 1, Scobey discloses a reconfigurable thin-film-filter-based dense wavelength division multiplexing (DWDM) device **(FIG. 14, ABSTRACT and col4 ln36-61)**, comprising:

a dual fiber collimator having an input port for receiving an input optical signal and a reflection output port **(FIG. 19 (20a- dual fiber collimator) in which the dual**

fiber collimators has an input port (e.g. 12a) and a reflection output port (e.g. 12b));

a single fiber collimator having a transmission output port **(FIG. 2 (20c-single fiber collimator) in which the single fiber collimator has a transmission output port (e.g. 20c))**; and

a thin film filter located between the dual fiber collimator and the single fiber collimator **(FIG. 19 (22-optical switch), FIG. 2 (22-optical switch), FIG. 14 (22-optical switch) and col4 ln38-50 in which the switch contains a thin film interference filter, located between the dual fiber collimator and the single fiber collimator)**, the thin film filter having a first face and a second face **(FIG. 14 (22-optical switch) and FIG. 8 (22-optical switch, 62-first surface, 64-second surface) in which the switch (thin film filter) has a first and second surface (face))**, the first face of the thin film filter having an upper one-half and a lower one-half **(FIG. 14 (22-optical switch) and FIG. 8 (22-optical switch, 64-second face) in which the second surface (first face) has an upper one-half and lower one-half)**, the lower one-half of the first face in the thin film filter being coated with a reflective material **(FIG. 8 (70-reflective coating) in which the lower one-half of the second surface (first face) is coated with a reflective material (e.g. reflective coating))**.

Regarding claim 2, Scobey discloses the DWDM device of Claim 1 as applied above.

Scobey further discloses wherein the thin film filter has a first position such that a wavelength of the input optical signal travels through the dual fiber collimator, the upper

one-half of the first face in the thin film filter, and the single collimator in generating an output optical signal at the transmission output port **(FIG. 14 (22-switch, positions A,B), FIG. 2 (position A), FIG. 3 (position B) in which the B position the input optical signal travels through the dual fiber collimator, the upper one-half of the first face and to the single collimator generating an optical signal at the transmission output port (e.g. FIGs. 3,14 (12c))**.

Regarding claim 3, Scobey discloses the DWDM device of Claim 2 as applied above.

Scobey further discloses wherein the thin film filter has a second position such that the input optical signal travels through the dual fiber collimator, projects into the lower one-half of the first face in the thin film filter having the reflective material, thereby the input optical signal is reflected back through the dual fiber collimator to the reflection output port **(FIG. 14 (22-optical switch, positions A,B), FIG. 2 (position A), FIG. 3 (position B) in which the A position the input optical signal travels through the dual fiber collimator, projects into the lower one-half of the first face having the reflective material, thereby being reflected back through the dual fiber collimator to the reflection output port (e.g. FIGs. 2,14 (12b))**.

Regarding claims 4 and 5, Scobey further discloses a mechanical relay for moving the switch (thin film filter) relay to a first and second position (FIG. 4 (80-electromechanical actuator, positions A,B)).

Regarding claim 6, Scobey discloses the DWDM device of Claim 1 as applied above.

Scobey further discloses wherein the reflective material of the lower one-half in the first face of the thin film filter comprises gold **(col11 ln31-41 in which the reflective region/material comprises a reflective gold layer)**.

Regarding claim 7, Scobey discloses the DWDM device of Claim 1 as applied above.

Scobey further discloses wherein the reflective material of the lower one-half in the first face of the thin film filter is coated with a metal or an oxide **(col11 ln31-41 in which the reflective region/material comprises a reflective gold layer (metal coating))**.

Regarding claim 8, Scobey discloses a reconfigurable device, comprising:

an input port for receiving a light signal **(FIG. 8 (12a-waveguide) in which the waveguide acts as an input port for receiving a light signal)**;

a thin film filter having a first face and a second face **(col4 ln36-61 and FIG. 8 (22-optical switch, 62-first surface, 64-second surface) in which the switch (thin film filter) has a first face (e.g. 64) and a second face (e.g. 62))**, the first face of the thin film filter having an upper surface area and a lower surface area **(FIG. 8 (22-optical switch, 64-second surface) in which the second surface has an upper surface area and a lower surface area)**, wherein the upper surface area is thin film coated for passing through a wavelength of the light signal **(FIG. 8 (68-wavelength selective filter) in which the upper surface area is a thin film coated for passing through a selected wavelength of the light signal)** and

the lower surface area is coated with a reflective material for blocking and reflecting the light signal **(FIG. 8 (70-reflective coating) in which the lower surface area is coated with a reflective coating for blocking an reflecting the light signal)**.

Regarding claim 9, Scobey discloses the reconfigurable device of Claim 8 as applied above.

Scobey further discloses comprising a dual fiber collimator coupled between the input port and the thin film filter **(FIG. 18 (20a-collimator, 22-optical switch) in which the dual fiber collimator is coupled between the input port (e.g. 12a) and the thin film (e.g. 22))**, the dual fiber collimator coupled to the input port for receiving the light signal and having a reflection port for receiving the reflected light signal **(FIG. 18 (20a-) in which the dual fiber collimator is coupled to the input port (e.g 12a) for receiving the light signal and having a reflection port (e.g. 12b) for receiving the reflected light signal)**.

Regarding claim 10, Scobey discloses the reconfigurable device of Claim 9 as applied above.

Scobey further discloses comprising a single fiber collimator for receiving the wavelength of light signal from the thin film filter and transmitting the light signal to a transmission output port **(FIG. 21 (610-optical switch)/FIG. 2 in which the thin film filter (622a-switching element) outputs λ_0 via a single fiber collimator)**.

Regarding claim 11, Scobey discloses the reconfigurable device of Claim 8 as applied above.

Scobey discloses wherein the reflective material of the lower surface area in the first face of the thin film filter comprises gold **(col11 ln31-41 in which the reflective region/material comprises a reflective gold layer)**.

Regarding claim 12, Scobey discloses the reconfigurable device of Claim 8 as applied above.

Scobey further discloses wherein the reflective material of the lower surface area in the first face of the thin film filter comprises a metal or an oxide **(col11 ln31-41 in which the reflective region/material comprises a reflective gold layer (metal coating))**.

Regarding claim 13 and 14, Scobey further discloses a mechanical relay for moving the switch (thin film filter) relay to a first and second position (FIG. 4 (80-electromechanical actuator, positions A,B)).

Regarding claim 15, Scobey discloses a hitless thin film filter **(col4 ln36-61)**, comprising:

a thin film filter having a first face and a second face, the first face having an upper surface and a lower surface **(FIG. 8 (22-optical switch, 62-first surface, 64-second surface) in which the switch (thin film filter) has a first face (e.g. 64) and a second face (e.g. 62) and the second surface has an upper surface area and a lower surface area)**; and

a reflective material coated onto the lower surface of the first face in the thin film filter, wherein the reflective material has a thickness t in which the thickness t affects the intensity of a light beam that is projected at a cross junction of the thin film filter, the

cross junction of the thin film filter being located between the upper surface and the lower surface **(col11 ln31-41 in which the thickness of the reflective region effects the reflectivity (intensity) of the reflected signal; therefore, the thickness of the reflective material inherently affects the intensity of the light beam. NOTE: at a cross junction, e.g. between FIG. 8: 70 and 68, the incoming light signal is still partly incident upon the reflective coating, thereby, affecting the intensity of the light signal)**.

Regarding claim 18, Scobey discloses a reconfigurable add-drop optical system **(col4 ln36-61)**, comprising:

a first thin film filter chip having a first face and a second face **(col4 ln36-61 and FIG. 21 (621a-first switch), FIG. 1 (10-second switch), FIG. 2 (third switch) in which the first switch (e.g first thin film filter chip) has a first face and a second face (e.g. FIG. 8, 22-switch with a first (64) and a second face (62))**, wherein the first face of the first thin film filter chip is partially coated with a thin film and is partially coated with a reflective material **(FIG. 8 (64-second surface, 70 reflective coating) in which the first face (e.g second surface) is partially coated with a reflective material)**; and

a second thin film chip, coupled to the first thin film chip, having a first face and a second face **(FIG. 21 (621a-first switch), FIG. 1 (10-second switch), FIG. 2 (third switch) in which the second switch (e.g second thin film filter chip) coupled to the first thin film chip and has a first face and a second face (e.g. FIG. 8, 22-switch with a first (64) and a second face (62))**, wherein the first face of the second thin film

filter chip is partially coated with a thin film and partially coated with a reflective material **(FIG. 8 (64-second surface, 70 reflective coating) in which the first face (e.g second surface) is partially coated with a reflective material)**.

Regarding claim 19, Scobey discloses the reconfigurable add-drop optical system of claim 18 as applied above.

Scobey further discloses comprising a third thin film chip, coupled to the second thin film chip, having a first face and a second face **(FIG. 21 (621a-first switch), FIG. 1 (10-second switch), FIG. 2 (third switch) in which the third switch (e.g third thin film filter chip) coupled to the second thin film chip and has a first face and a second face (e.g. FIG. 8, 22-optical switch with a first (64) and a second face (62))**, wherein the first face of the third thin film filter chip is partially coated with thin film and partially coated reflective material **(FIG. 8 (64-third surface, 70 reflective coating) in which the first face (e.g second surface) is partially coated with a reflective material)**.

Regarding claim 20, Scobey discloses the reconfigurable add-drop optical system of claim 18 as applied above.

Scobey further discloses comprising:

a dual fiber collimator coupled to the first thin film chip, the dual fiber collimator having an input port and a reflection output port **(FIG. 21 (610-optical switch) in which the optical switch contains a dual fiber collimator coupled to the first thin film chip (e.g. 662a) having an input port and a reflection output port)**; and

a single fiber collimator coupled to the first thin film chip, the single fiber collimator having a transmission output port **(FIG. 21 (610-opical switch) in which the single fiber collimator coupled to the first thin film chip is a transmission output (e.g. outputs λ_0))**.

Regarding claim 21, Scobey discloses the reconfigurable add-drop optical system of claim 18 as applied above.

Scobey further discloses comprising:

a first dual fiber collimator coupled to the first thing film chip, the dual fiber collimator having an input port and an output reflection/add port **(FIG. 19 (20a-collimator) in which the dual fiber collimator has an input port (e.g. 12a) and an output reflection port (e.g. 12b))**; and

a second dual fiber collimator coupled to the first thin film chip, the single fiber collimator having a transmission output port and an input add port **(FIG. 19 (20c-collimator) in which the second dual fiber collimator coupled the first thin film chip (e.g. 22) has an output port (e.g 12d) and an add port (e.g. 12c))**.

Regarding claim 22, a reconfigurable thin-film-filter-based dense wavelength division multiplexing (DWDM) device, comprising:

a first dual fiber collimator having an input port for receiving an input optical signal and a output reflection/add port **(FIG. 19 (20a-collimator) in which the dual fiber collimator has an input port (e.g. 12a) and an output reflection port (e.g. 12b))**;

a second dual collimator having an output transmission port and an input

add port **(FIG. 19 (20c-collimator) in which the second dual fiber collimator coupled the first thin film chip (e.g. 22) has an output port (e.g 12d) and an add port (e.g. 12c))**; and

a thin film filter located between the first dual fiber collimator and the second dual fiber collimator **(col4 ln36-61 and FIG. 19 (22-optical switch) in which the optical switch (thin film filter) is located between the first dual fiber collimator and the second dual fiber collimator)**, the thin film filter having a first face and a second face **(FIG. 8, 22-switch with a first (64) and a second face (62))**, the first face of the thin film filter having an upper one-half and a lower one-half, the lower one-half of the first face in the thin film filter being coated with a reflective material **(FIG. 8 (64-second surface, 70 reflective coating) in which the first face (e.g second surface) has an upper and lower half, with the lower one-half being partially coated with a reflective material)**.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. **Claims 16 and 17 are rejected** under 35 U.S.C. 103(a) as being unpatentable over Scobey in view of Lecture (Lecture 25, 30 November 1999).

Regarding claim 16, Scobey discloses the hitless thin film filter of Claim 15 as applied above.

Scobey further discloses the thin film filter to be an interference filter col4 ln38-61.

Scobey does not expressly disclose the equation governing an interference filter and wherein intensity of the light is governed by the following equation: $t(\sin\Phi) = n\lambda$ wherein the angle Φ denotes the incident angle of light, the symbol λ denotes a particular wavelength and the symbol n denotes an integer or fractional number.

Lecture teaches the equation governing a dielectric slab (thin film) interference filter and wherein intensity of the light is governed by the following equation: $t(\sin\Phi) = n\lambda$ wherein the angle Φ denotes the incident angle of light, the symbol λ denotes a particular wavelength and the symbol n denotes an integer or fractional number **(pg 3 equation: 25.5 in which the transmission of light is governed by equation: $m\lambda_m = 2d\cos\theta_t$ (m=0,1,2,...) where m corresponds to the peak intensity/order (pg3-adjustable by varying d, n, or θ_t), d corresponds to the dielectric medium thickness-pg2, θ_t-corresponds to the light signal incident angle and λ_m corresponds to the light wavelength. NOTE: $2d\cos\theta_t$ is functionally equivalent to $t(\sin\Phi)$, e.g. $m\lambda_m$ is dependent on the thickness-d)**

Regarding claim 17, rejected as stated in claim 16 rejection in which the peak intensity/order is given by m=0,1,2 and is adjustable by varying d, n, or θ_t, e.g. peak and min intensities are adjustable.

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luis F. Garcia whose telephone number is (571)272-7975. The examiner can normally be reached on 8-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ken N. Vanderpuye can be reached on (571)272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LG

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SUPERVISORY PATENT EXAMINER